

Original Research Article

Effects of interactive education with conversation map on foot care behaviors in elderly diabetic patients with high-risk diabetic foot

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ABSTRACT

Background: Diabetic foot is one of the main reasons that seriously affect the quality of life and disability. Good foot care can prevent 85% amputation of diabetic foot patients. The purpose of this study is to explore the effects of interactive education with conversation map on foot care behaviors among elderly diabetic patients with high-risk diabetic foot.

Methods: 96 elderly diabetic patients in Endocrinology Department of the Second Affiliated Hospital of Shandong First Medical University from January to December in 2020 were selected as the research objects. According to the parity of the last two digits of the hospitalization number, the odd number was divided into the control group and the even number was divided into the experimental group. The control group was given traditional health education and interactive education with conversation map for diabetic foot launched by the international diabetes federation was added to the experimental group. After 3 months of intervention, fasting blood glucose, 2 hours postprandial blood glucose, glycosylated hemoglobin and foot care behaviors of the two groups were observed.

Results: The fasting blood glucose, 2 hours postprandial blood glucose, glycosylated hemoglobin and foot care behaviors of the experimental group were significantly better than those of the control group and the difference was statistically significant ($p < 0.05$).

Conclusions: The interactive education with conversation map can effectively improve the foot care behaviors of elderly diabetic patients with high-risk diabetic foot, and then prevent the occurrence of diabetic foot.

Keywords: Elderly diabetic patients, Conversation map, Foot care behavior

INTRODUCTION

According to the World Health Organization (WHO), diabetic foot is defined as the foot of diabetic patients with ulceration, infection and/or destruction of the deep tissues, associated with neurological abnormalities and various degrees of peripheral vascular disease in the lower limb.¹ It is also one of the main reasons that seriously affect the quality of life and disability. Good foot care can prevent 85% amputation of diabetic foot patients.² The vast majority of elderly patients with diabetes are very lack of

relevant knowledge, especially have little knowledge about foot care behaviors. How to help patients keep healthy and improve the quality of life is the main research topic of health education on diabetes.³

The conversation map tool is used to explore a new way of diabetes health education, which is planned by the International Diabetes Federation and Healthy Interactions and sponsored by Lilly.⁴ This study will apply this tool to the elderly diabetic patients with high-risk diabetic foot.

METHODS

Study type and duration

The study was an observational study conducted from January to December in 2020.

Basic information

96 patients in Endocrinology Department of the Second Affiliated Hospital of Shandong First Medical University were selected as the research objects. According to the parity of the last two digits of the hospitalization number, the odd number was divided into the control group and the even number into the experimental group, with 48 cases in each group. In the control group, there were 25 males and 23 females, aged (63.7±12.2) years, 9 cases of college degree or above, accounting for 18.7%, 23 cases of high school education, accounting for 47.9%, 11 cases of junior high school education and below, accounting for 22.9%, and 5 cases of illiteracy, accounting for 10.5%. In the experimental group, there were 27 males and 21 females, aged (62.8±13.5) years, 8 cases of college degree or above, accounting for 16.7%, 20 cases of high school education level, accounting for 41.6%, 15 cases of with junior high school education level or below, accounting for 31.2%, and 5 cases of illiteracy, accounting for 10.5%. There were no significant differences in gender, age and educational level between the two groups (p>0.05).

Inclusion and exclusion criteria

Eligibility criteria included patients ≥60 years with no obvious foot ulcer who were diagnosed according to WHO

diabetes diagnosis criteria in 1999. Exclusion criteria were unconsciousness, mental retardation and communication disorder.

Procedure

The control group was given individualized bedside education during hospitalization and weekly diabetes knowledge education after discharge. Based on the traditional health education, the interactive education with conversation map for diabetic foot was added to the experimental group. This interactive education was carried out 2-3 times a week, 4-6 patients and 30 minutes each time.

An interest questionnaire was designed to divide the patients' interest in health education into five levels: very interested 5 points, interested 4 points, neutral 3 points, uninterested 2 points, very uninterested 1 point, as shown in Table 15. After the interactive education, the counselors distributed the questionnaires and collected on the spot. (Table 1)

The Diabetes Self-care Scale (DSCS) was used to evaluate the self-care behavior, which includes a total of 6 dimensions and 26 items⁶. Each item is scored on a 5-point Likert scale (1-5 points) and the higher score means the better self-care behavior. The total score of the scale is 26~130 points. Test-retest reliability of the scale was 0.92 and the Cronbach's α coefficient was 0.887. The experimental group and the control group were scored at admission and 3 months respectively.

Table 1: Interest questionnaire for interactive health education with conversation map.

Variables	Very interested (5 points)	Interested (4 points)	Neutral (3 points)	Uninterested (2 points)	Very uninterested (1 point)
Education mode	-	-	-	-	-
Schedule	-	-	-	-	-
Frequency	-	-	-	-	-

The fasting blood glucose, 2h postprandial blood glucose, glycosylated hemoglobin were examined at admission and 3 months later.

Statistical analysis

The data were analyzed by Statistical package for social sciences (SPSS) 20.0 and expressed as, the t-test was used for statistical analysis.

RESULTS

422 questionnaires were sent out and 406 valid questionnaires were returned, with an effective rate of 96.2%. 228 of them were very interested, accounting for 56.1%, 98 of them were interested, accounting for 24.3%, 54 of them were neutral, accounting for 13.3%, and 26 of them were uninterested, accounting for 6.4%. The demographic data of the questionnaires is shown in Table 2.

Before the intervention, there was no significant difference in the score of foot care behavior between the two groups ($p>0.05$). After 3 months of intervention, the foot care behavior of the experimental group was improved with significant difference ($p<0.05$), and the score of the control group had no significant difference ($p>0.05$), as shown in Table 3.

Table 2: The demographic data of the questionnaires.

Variables	N	%
Very interested	228	56.1
Interested	98	24.3
Neutral	54	13.3
Uninterested	26	6.4

Table 3: Comparison of the score of foot care behavior between the two groups.

Variables	Experimental group		Control group	
	Before intervention	After intervention	Before intervention	After intervention
Foot care	9.89±2.0 6	26.3±8. 79	9.71±2.3 2	14.2±5.1 3

Table 4: Comparison of the observation indexes between the two groups.

Variables	Experimental group		Control group	
	On admission	3 month	On admission	3 months
Fasting blood glucose	11.12 ±1.06	6.12± 1.52	10.83± 1.32	7.21±1. 77
2h postprandial blood glucose	15.95 ±3.34	10.36± 2.15	16.1±3.4	12.48± 2.62
Glycosylated hemoglobin	8.56± 1.23	6.2± 1.21	8.72± 1.13	7.5±2.1 6

There was no significant difference in the observation indexes between the two groups before the intervention ($p>0.05$), but there was significant difference after the intervention ($p<0.05$). The indexes of the experimental group were better than those of the control group, as shown in Table 4.

DISCUSSION

Diabetic foot is a common chronic diabetic complication with expensive treatment, high recurrence and mortality rate. It has become a worldwide public health problem. Most of elderly diabetic patients cannot correctly

understand diabetic foot and are deficiency of daily foot care knowledge and behaviors.⁸ The improvement of foot care behaviors can reduce the amputation rate by 40~80% and effectively avoid foot complications.⁹ However, most of the elderly patients have low educational level and have little knowledge about foot care behaviors. The traditional health education based on words often makes the effect greatly reduced because the elderly can't understand it.¹⁰⁻¹² The conversation map is intuitive, visual, popular and has unlimited requirements for participants' educational level, which is welcomed by elderly patients. The interactive health education not only play the role of traditional education mode, but also let patients participate in it, fully mobilize the subjective initiative, improve the self-management ability, control blood sugar and prevent the occurrence of diabetic foot. Therefore, the interactive health education in elderly diabetic patients with conversation map has significant effect, which not only greatly improves the level of foot care behavior, but also significantly reduces the levels of fasting blood glucose, 2h postprandial blood glucose and glycosylated hemoglobin.

Limitations

The main limitation of the study is that we have not assessed the existing other diseases of the patients. Many diabetic patients present with coexisting illness such as hypertension, dyslipidemia etc, which are potential factors that may have affected the results of the study.

CONCLUSION

The interactive health education in elderly diabetic patients with conversation map has significant effect, which not only greatly improves the level of foot care behavior, but also significantly reduces the levels of fasting blood glucose, 2h postprandial blood glucose and glycosylated hemoglobin. It is worth being popularized.

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REFERENCES

1. Apelqvist J, Bakker K, Houtum W. International consensus and practical guidelines on the management and the prevention of the diabetic foot. *Diabetes/Metabolism Research and Reviews.* 2000;16(S1).
2. Singh N, Armstrong DG, Lipsky BA. Preventing foot ulcers inpatients with diabetes. *JAMA.* 2005;293(2):217-28.
3. Minassian VA, Drutz HP. Urinary incontinence as a worldwide problem. *Int J Gynaecol Obstet.* 2003;82(3):327-38.
4. Gu Yan, Yuan Li, Ou Qing. Experience in implementation and application of diabetes education

- tool dialogue. *Journal of nurse training.* 2010;25(3):537-38.
5. Yingli Z, Mingyun N, Cuiqin Z. Application of interactive education in rural elderly diabetic patients with conversation map. *International Journal of Advances in Medicine.* 2021;8(3):348-51.
 6. Onozato Y, Ishihara H, Iizula H. Endoscopic submucosal dissection for early gastric cancers and large flat adenomas. *Endoscopy.* 2006;38(10):980-6.
 7. Jianshu L, Yunjiao L. Effects of Interactive Education with Conversation Map on self-care and Blood glucose control in patients with type 2 diabetes. *Journal of Modern Nursing.* 2015;14(4):34-7.
 8. Lifeng F, Xiaoqun Z, Jianling H. Investigation on the knowledge and behavior of foot care in diabetic patients. *Chinese Journal of Nursing.* 2005;40(7):493-7.
 9. Weixing Z, Weilan Z, Honglian D. Research on Clinical Nursing Path Combined with Cluster Nursing in Improving the Quality of Nursing Management. *Chinese Journal of Modern Nursing.* 2013;19(13):1564-6.
 10. Ming Z, Yuqin Z, Xiaoli Z. The influence of education level and health education on self-management behavior of rural diabetes patients. *Chinese Journal of Gerontology.* 2014;34(16):4687-8.
 11. Sharifirad G, Najimi A, Hassanzadeh A. Application of BASNEF educational model for nutritional education among elderly patients with type 2 diabetes: improving the glycemic control. *Journal of Research in Medical Sciences the Official Journal of Isfahan University of Medical Sciences.* 2011;16(9):1149-58.
 12. Cuixia F, Ruigang Z. Cause analysis and Countermeasures of poor glycemic control in rural patients with diabetes mellitus. *Journal of community medicine.* 2007;5(1):14-5.

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